

[0176] It would be understood that in some embodiments other functionality can be provided by determining 'tap' sounds around the apparatus. For example muting and unmuting can be performed by detecting 'tap' sounds above the phone 759 to unmute the telephone call or below the phone 757 to mute the call. In some embodiments the 'tap' can toggle on and off the function, for example a tap above the phone mutes/unmutes the call and a tap below the phone switches the call in and out of hands free mode.

[0177] With respect to FIG. 9 the use case of controlling media player functionality is shown. For example the apparatus 10 and in particular the user interface converter 203 can be configured to define regions surrounding the apparatus within which when the surface is tapped media playback functions are initiated.

[0178] Any suitable functionality can be implemented. For example a volume increase/decrease function can be generated in the same manner as described herein with respect to scrolling (an upwards dragging sound increasing the volume and a downwards dragging sound decreasing the volume).

[0179] Furthermore as shown in FIG. 9 the media functionality can include a play/pause function 801 associated with 'tap' sounds within a region beneath the display, a fast forward function 803 associated with 'tap' sounds within a region to the right of the play region, and a next track, chapter etc function 807 associated with 'tap' sounds within a region to the right of the fast forward region, a rewind function 805 associated with 'tap' sounds within a region to the left of the play/pause region, and a last track, chapter etc function associated with 'tap' sounds within a region to the left of the rewind function region.

[0180] As described herein in some embodiments the directional processor can be configured to determine where there are multiple or concurrent 'taps' or 'dragging'. In such embodiments the user interface converter can generate 'multitouch' like user interface signals.

[0181] For example FIG. 10 shows an image rotation 905 function being performed based on a user interface signal output generated by detecting a first touch or dragging sound to the left 901 of the display moving upwards and a second touch or dragging sound to the right 903 of the display moving downwards and generating a rotation clockwise user interface signal. It would be understood that an anticlockwise rotation user interface signal could be generated after detecting a left touch moving downwards and a right touch moving upwards.

[0182] Furthermore in some embodiments a detecting similar contra-motion dragging action above and below the display region could also generate rotational user interface signals.

[0183] Furthermore with respect to FIGS. 11 and 12 a 'multitouch' type zooming in and zooming out user interface input is shown. Therefore in some embodiments an upwards moving dragging sound both to the left 1001 and to the right 1003 of the display can cause the user interface converter to generate a zooming in user interface signal as shown by the growth of the shape 1005 in FIG. 11. Similarly a downwards moving dragging sound both to the left 1101 and to the right 1103 of the display can cause the user interface converter to generate a zooming out user interface signal as shown by the growth of the shape 1105 in FIG. 12

[0184] In some embodiments the user interface signal can be used to replace a user interface keypad or keyboard entry.

For example as shown in FIG. 13 the direction of tapping can control specific applications such as setting an alarm clock function on the apparatus.

[0185] In such an example the setting of the hours, minutes of the alarm clock can be defined by tapping the apparatus resting surface at the approximate clock direction. For example a first touch 1201 direction defines the hour 1211 setting of the alarm clock, a second touch 1203 direction defines the minute 1213 setting of the alarm clock 1213 and a third tap or double tap defines whether the alarm is a.m. or p.m. (single tap 1205 being a.m. and a double tap 1207 being p.m.).

[0186] In some embodiments as shown herein subsequent inputs generated user inputs can depend on earlier or previous inputs. This is shown for example in the clock application shown in FIG. 13 where subsequent taps define hour, minute and am/pm settings. It would be understood that any suitable 'memory' or state based user input can be generated in a similar manner. For example a menu system can be navigated by a first tap selecting a first or entry level menu and subsequent taps or drags navigating the sub-menus or returning the apparatus state to the earlier menu level. For example an entry menu selection can be made by a tap to a defined region which then opens up sub menus associated with the entry menu which can either be navigated by further taps to progress down the menu structure or returned from by for example dragging the finger 'backwards' above or below the apparatus or 'upwards' to the left or right of the apparatus (or in some embodiments simply a tap to the left or top of the apparatus).

[0187] With respect to FIG. 14 a further example is shown where the sound user interface can be used to control the action of the apparatus when playing a game. In such embodiments the user interface converter 203 can be configured to generate multivariate inputs (for example a direction of firing and firing power in a shooting game) by determining a direction of a tap and a volume of a tap. For example as shown in FIG. 14 the user interface converter can generate a first direction, power user input for a first tap at location 1311 with a tap volume 1313 shown on the display with direction and distance 1301 a second direction, power user input for a second tap at location 1331 with a tap volume 1333 shown on the display with direction and distance 1321 (the second volume 1333 being greater than the first volume 1313 and thus the second distance 1321 being greater than the first distance 1301).

[0188] It would be understood that the user input could be any suitable gaming input such as controlling where a goalkeeper attempts to catch incoming balls by defining the direction the virtual goalkeeper dives by the direction of the tap. In such a way the device screen is not obstructed by the user's hands but the whole screen is visible to the user for the whole time while operating the application.

[0189] The user interface inputs could also be used for reaction time games and memory games requiring the user not to touch the screen and thus enable the screen to display the maximum amount of information without being obscured.

[0190] Furthermore elements of a public land mobile network (PLMN) may also comprise apparatus as described above.

[0191] In general, the various embodiments of the invention may be implemented in hardware or special purpose circuits, software, logic or any combination thereof. For example, some aspects may be implemented in hardware, while other aspects may be implemented in firmware or soft-